

No. 9. — *Notes on the United States species of Tachytes*
(Hymenoptera: Larridae)

By NATHAN BANKS

In 1892 Fox published a revision of this genus and later, 1893, added one new species. His division of the males according to the structure of the front coxae and front femora is most useful, but the separation of the females as "bee-like" or not, is not so helpful. Since then Rohwer has described about ten species, Viereck and Mickel three, Bradley and I one each. For some years I have tried, at intervals, to prepare better tables for the females, and to include some of those later described, and some which appear to be new.

Patton, whose descriptions are extremely good, noted that *mandibularis* had more spines on the front basitarsi than some other forms. This has been used abroad in synoptic tables. However the extra spine is sometimes shorter or absent, but is helpful at times.

On the upper edge of the hind and usually mid basitarsi are usually two spines before the tip of the joint, in several species there are three of these spines, and they are usually broader, and somewhat curved; I have utilized these, and also made a table for those having this character, although they are somewhat variable.

Fox noted that in *aurulentus* the legs were bare; many species have the femora hairy on sides and beneath; however, there are a number of species in which the hind femora have no (or only a few) erect hairs beneath. This appears to be a fairly natural character. Rohwer (Ent. News, 20, 197, 1909) arranged the females in three sections according to the color of the scales on the pygidium. The bronzy (often partly black) ones are readily distinguished; those with golden or whitish scales are not so readily separated, for some of those with golden in one view may appear partly whitish in another view, and some considered white may show some yellowish. However, the grouping is helpful and I have made tables to each group.

The males will doubtless be more surely distinguished by a study of the male genitalia. I have figured some of these. I have given tables to one section of the large males, and to the small forms, in order to include species described since Fox. The shape of the last ventrite (8th) in the male is often very useful in separating closely allied species; in the small forms it shows less difference. The distance apart of the lateral points of this ventrite, and the amount of excision varies somewhat, and when these points are lobes, as in *calcaratus*, the breadth of the lobe may vary a little.

The comparative length of the third and fourth antennal joints, although fairly constant, is often about the same in allied species. Likewise the comparison of vertex-width with the length of second plus third antennal joints is sometimes not satisfactory, for when the third joint is longer the vertex may be broader.

The approach of the recurrent veins toward each other, noted in species with a partly red abdomen is also variable; likewise the width of the second and third submarginal cells on the radius is also variable. In some species the third submarginal cell is very long, but it is more of a group character. In some of the small species there is a triangular, usually polished, depression above the ocellar region, but it is not definite enough in all cases to be useful. I have noted that the hind basitarsus in some species has one or more spines on the anterior (outer) side, while in others there is none except at the tip, and in these forms the basitarsus is slightly concave on outer side; this character may prove to be more important with further studies.

In those with hairy hind femora and in some others the groove on the posterior slope of the propodeum is widened near middle and above; in most of the small forms it is not or scarcely widened, but in some of these (*parvus*, *pattoni*) it is widened in the male. In some the groove plainly reaches the end of the propodeum.

Turner has used the length of the galea compared with length of the scape. In most museum specimens the galea is not extended, but in a number that I have seen there does not appear to be much variation in our species, many are shorter than the scape, a few as long or a little longer. A more useful structure is the tongue (or labium) and the size and extent of its lobes; I have figured these for several species.

The sculpture in closely related species is but little different, and not easily described; the second ventral in our species is dull and densely and finely punctate, except on the hind border. Here there is a curved row of long bristles, usually four on each side, at least one (*crassus*) showing five or six. In one (*aurulentus*) the fourth from center is more removed from the others than usual. Various other minor structures could, doubtless, be studied with profit.

I have examined the types in Philadelphia and Washington, and the M. C. Z. possesses paratypes of some of Cresson's and Rohwer's species. Several changes have been made in names as will be explained under each species.

I have proposed a new genus for *Tachytes mergus* and an allied new species. The species which have a distinct line or groove on the dorsum of the propodeum are evidently closely related, and could form a sub-

genus, if the character were constant; some specimens of *T. harpax* and *T. columbiae* show it, in others faint or absent.

I have placed *Tachytes mergus* Fox and a related new species in a new genus, *Tachyoides*, which can be distinguished as follows:

Basil joint of antennae of female very long, fusiform, more than one-half of basal width of face; pygidium with but few scales, so that the ground color shows between the scales; male similar to *Tachynana*, except somewhat narrower vertex (cf. p. 409) *Tachyoides*

Basal joint of antennae shorter in both sexes, not fusiform, not one-half basal width of face; pygidium covered with scales *Tachytes*

The type of *Tachytes* is *T. tricolor* Panzer (*T. europaea* Kohl). The hind femora are bare, two spines on the hind basitarsus above, base of abdomen rufous, and it is very similar to the species I have described as *T. cressoni*. Dahlbom made a genus *Tachyptera* for *T. obsoleta* Rossi and other European species. This is a black-bodied species, four silvery bands, two spines on hind basitarsus, hairy hind femora, and a faint groove above on propodeum and thus is very similar to our *T. mandibularis*. The name *Tachyptera* is preoccupied, and since those with the hairy hind femora are easily separated I propose a new subgeneric name (*Tachyplena*) for this section, and another (*Tachynana*) for the small species.

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The best grouping of the females that I can suggest now is the following:

1. Hind femora plainly with pendent hairs along most of its lower edge; median groove on posterior slope of propodeum broadened above; but two spines above on upper edge of hind basitarsus before tip, and with one or more spines near middle of outer (anterior) side; pleura and sternum with long hair. Subgenus *Tachyplena* **subgen. nov.** genotype *T. mandibularis* Patton. Other species included are *validus*, *praedator*, *belfragei*, *calcaratus*, *calcaratiformis*, *harpax*, *columbiae*, *crassus*, *distinctus*, *badius*, *foxi*, *auricomanes*, *ermineus*, *floridanus*, and

comanche; the last six may form a separate group; they have four spines on front basitarsus (others five), the tibiae are black (in others rufous), and the hind basitarsus sometimes has three spines above.

In all species the males have no groove on base of front femora, and no projection at tip of front coxae.

- 1a. Hind femora practically without pendent hair beneath, except possibly a little near base 2
2. Median groove on posterior slope of propodeum not or scarcely widened near middle or above; hind basitarsus with one or two spines near middle of anterior (or outer) side, and with one or two spines above before tip, rarely three; third joint of antennae often no longer, frequently shorter than the fourth joint; hind tibiae with the spines above usually short and often stubby; mostly small species. Subgenus *Tachynana* **subgenus nov**, type *Tachytes obscurus* Cresson; includes also *abdominalis*, *obductus*, *birkmanni*, *pattoni*, *maestus*, *arizonicus*, *parrus*, *atomus*, and several species known only from males, *minor*, *minutus*, *intermedius*, *hirsutifrons*, and *amiculus*, and probably *austerus*.
- 2a. Median groove on posterior slope of propodeum widened near middle and above; third joint of antennae as long or longer than fourth, and usually twice as long as second; spines of hind tibiae above sharp, not stubby; frequently three spines above on hind basitarsus before tip, and in several species no spines near middle of front side of basitarsus; large species. Subgenus *Tachytes*, type, the European *T. tricolor*; contains *aurulentus*, *austrinus*, *exornatus*, *rufofasciatus*, *elongatus*, *cressoni*, *fulviventris*, *utahensis*, *hesperus*, *brevipilis*, *pepticus*, *sayi*, and *sericatus*.

Females of subgenus *Tachyplena*

1. Tibiae rufous; five spines on front basitarsus, two on hind basitarsus; median line on propodeum above usually distinct . . . 2
- Tibiae black; four spines on front basitarsus; often three on hind basitarsus 12
2. But three silvery bands on abdomen; the pygidium bronzy . . . 3
- With four silvery bands on abdomen; wings yellowish 4

3. Bands on abdomen often faint except on sides; mesonotum bordered with gray pubescence; face rather dull golden; fourth and usually third tarsal joints without spines *crassus*
 Bands on abdomen distinct; mesonotum bordered with golden, face bright golden; third and usually fourth tarsal joints with spines *distinctus*
4. Pygidium bronzy to black; face golden; thorax with more or less golden pubescence *mandibularis*
 Pygidium golden to whitish 5
5. Pygidium whitish or silvery 6
 Pygidium golden to yellowish 7
6. Silvery bands bend forward near middle of each segment; face more silvery; southern *belfragei*
 Silvery bands follow margin of segments; northern
calcaratiformis
7. Propodeum densely clothed with golden pubescence, also on pleura, and sides of mesonotum, and fully as bright on face; femora hardly more than one-half black; bands on abdomen often somewhat yellowish *praedator*
 Not so much golden on propodeum, and if face somewhat golden the femora black to near tip 8
8. Face silvery white seen from in front; third joint of antennae plainly longer than fourth 9
 Face more or less golden to yellowish 10
9. Pygidium golden *calcaratus*
 Pygidium whitish *calcaratiformis*
10. Body broad, pygidium broad, bright golden; third antennal joint plainly longer than fourth; last joint of antennae tapering and longer than penultimate *validus*
 Body and pygidium more slender; pygidium not so bright golden; third joint of antennae but little if any longer than the fourth 11
11. Hind tibia with a distinct dark streak on inner side; clypeal margin with a distinct median narrow somewhat bilobed projection; third joint of antennae a little longer than fourth
harpax
 Hind tibia without distinct dark streak; clypeal margin with a broad but low projection; third joint of antennae scarcely longer than fourth *columbiae*

12. Pygidium coppery to black; body with but little silvery pubescence; third antennal joint hardly longer than the fourth
badius
 Pygidium whitish or golden 13
13. Pygidium whitish to yellowish; body and legs somewhat silvery pubescent; third antennal joint hardly longer than fourth; last tarsal joint pale *foxi*
 Pygidium yellowish to golden; body and legs strongly silvery; third antennal joint longer than fourth; last tarsal joint dark
ermineus

Females of subgenus *Tachytes*

1. Wings very dark; but two silvery bands on abdomen; pygidium bronzy to black *aurulentus*
 Wings hyaline to yellowish, at least three silvery bands on abdomen 2
2. But three silvery bands on abdomen; pygidium bronzy to black; rarely spines between rows on upper side of hind tibiae 3
 Four bands on abdomen 4
3. Femora largely rufous; face somewhat golden *elongatus*
 Femora largely black; face more whitish; bands on abdomen broad *austrinus*
4. Tibiae and much of femora rufous; abdomen mostly rufous, large species; pygidium golden *exornatus*
 Femora mostly black, tibiae also 5
5. Abdomen wholly black; pygidium bronzy to black 6
 Abdomen rufous, or yellowish, at least on basal part above . . . 8
6. Pleura and propodeum strongly silvery sericeous, hair on propodeum above very short *sericatus*
 Pleura and propodeum only slightly if at all silvery sericeous; hair on propodeum longer 7
7. From the Middle and Eastern States *pepticus*
 From Kansas and Nebraska west *sayi*
8. Pygidium golden to yellowish or paler; basal segment of abdomen at most with only short hair 9
 Pygidium bronzy to black, basal segment plainly hairy at least on anterior sides 12

9. Two segments of abdomen rufous; hair on propodeum moderately long; usually but two spines above on hind basitarsus before tip; pygidium pale yellowish *cressoni*
Three segments or more rufous 10
10. Outer side of hind basitarsus without a spine near middle; no hair on basal segment; body rather slender; abdomen usually wholly rufous or yellowish *rufofasciatus*
Outer side of hind basitarsus with one or two spines near middle; some faint or sparse, fine hair on basal segment; abdomen broader 11
11. Hair on propodeum no longer than tibial spines; propodeum less sloping behind, from Texas *brevipilis*
Hair on propodeum about twice as long as tibial spines; propodeum steeply sloping behind; from Washington and Oregon
hesperus
12. Pleura and sides of propodeum with much silvery pubescence; bands on abdomen distinct *fulviventris*
Pleura and sides of propodeum scarcely at all silvery; bands on abdomen not noticeable except toward sides *utahensis*

Females of subgenus *Tachynana*

1. Abdomen wholly black, only fine bristles or none on posterior side of front tibiae 2
Abdomen more or less rufous or yellowish; distinct though short spines on posterior side of front tibiae 5
2. With but three silvery bands on abdomen; pygidium bronzy to black; spines above on hind tibiae very short and stubby
obscurus
More or less white on four segments, though not always plainly in a band 3
3. Pygidium bronzy or coppery; abdomen shining, very small
parvus
Pygidium golden, larger species 4
4. Abdomen shining, with silvery marks mostly on sides, hardly bands *maestus*
Abdomen dull, with somewhat yellowish bands, almost complete
obductus

5. Bands or spots of silvery on three segments only6
 Bands or silvery spots on the fourth segment also7
6. Face silvery white; bands on abdomen white, thorax marked with
 silvery white; pygidium bright golden*arizonicus*
 Face dull golden or yellowish; bands on abdomen slightly yellow-
 ish; thorax and pleura with gray pubescence; pygidium rather
 pale golden, sometimes whitish toward base*pattoni*
7. Spines on front (outer) side of hind basitarsus; hair on anterior
 sides of basal segment of abdomen; wings somewhat yellowish;
 hair on sides of mesonotum yellowish; spines above on hind
 tibiae very stubby*abdominalis*
 No spines on front of hind basitarsus; no hair or very faint on
 basal segment; wings hyaline; hair on sides of mesonotum
 white8
8. Antennae short; third and joints beyond not twice as long as
 wide at tip; pygidium coppery; six or seven millimeters long
atomus
 Antennae longer; third and joints beyond fully twice as long as
 wide at tip; pygidium golden to almost coppery; ten to twelve
 millimeters long*birkmanni*

Artificial keys to females

Females with pygidium coppery or bronzy to black

1. With but two segments with silvery bands, femora and tibiae
 black; all femora bare; wings dark*aurulentus*
 With three segments with apical silvery band2
 With four segments with apical silvery band6
2. Tibiae black; thorax without white pubescence, no hair under
 hind femora; tibial spines short and stubby; pygidium with
 erect hair besides the depressed iridescent ones*obscurus*
 Tibiae rufous; no erect hair on pygidium3
3. Femora yellowish or rufous; wings yellowish*elongatus*
 Femora black4
4. No erect hair under hind femora; three spines on hind basitarsus
austrinus
 Hind femora hairy beneath; but two spines on hind basitarsus
 above before tip5

5. Wings plainly yellowish; pronotum with yellowish pubescence; two whitish spots on mesonotum *distinctus*
Wings scarcely yellowish; pronotum with white pubescence; no spots on mesonotum *crassus*
6. Hind femora plainly hairy beneath 7
Hind femora bare 8
7. Tibiae and tarsi largely yellowish; a median groove on propodeum above *mandibularis*
Tibiae and tarsi largely black; no median groove on propodeum above *badius*
8. Less than ten millimeters long; hind basitarsus with but one spine above; pygidium coppery 12
More than ten millimeters long; hind basitarsus with three (or two) spines above; pygidium bronzy to black 9
9. Abdomen rufous on base 10
Abdomen wholly black 11
10. Thorax and propodeum with much white pubescence . . *fulviventris*
Thorax and propodeum with little if any white pubescence . . *utahensis*
11. Entire body more or less silvery pubescent, or with a sericeous bloom in certain views; hair on propodeum very short . *sericatus*
Very little silvery pubescence; hair on propodeum much longer . . *pepticus* group
12. Abdomen reddish on basal part *atomus*
Abdomen wholly black *parvus*

Females with a golden pygidium

1. Abdomen partly red; practically no hair under hind femora, and other femora have little but appressed scale-like hair below; dorsal surface of propodeum without a median groove 2
Abdomen wholly black; often long hair on under side of all femora 9
2. Femora almost wholly rufous; mesonotum bordered with yellow pubescence; hind basitarsus usually with three spines above or golden *exornatus*
Femora (and often tibiae also) almost wholly dark 3

3. Hind basitarsus with three spines above before tip; third joint of antennae plainly longer than fourth.....4
Hind basitarsus usually with but two spines above before tip; third antennal joint scarcely, if any, longer than fourth.....5
4. Hair on propodeum scarcely, if any, longer than the spines on upper side of hind tibiae.....*brevipilis*
Hair on propodeum mostly twice as long or more than the spines on upper side of hind tibiae.....*hesperus*
5. Fourth abdominal segment black and without silvery or pale band; wings hyaline.....6
Fourth segment with at least some trace of a silvery or pale band.....7
6. Face and clypeus silvery white.....*arizonicus*
Face and clypeus yellowish to golden.....*pattoni*
7. Wings hyaline; band on abdomen slightly yellowish, face with yellowish to golden pubescence; mesonotum with silvery appressed hair on disc; sides of pygidium slightly convex
birkmanni
Wings more or less yellowish.....8
8. Pygidium triangular, sides straight; face white; tibiae often partly rufous.....*rufofasciatus*
Pygidium more slender; last two segments of abdomen black; tibiae and most of tarsi black.....*abdominalis*
9. Hind femora without hair below; tibiae black; rather small species.....10
Hind femora hairy below; tibiae usually rufous (except *ermineus*)
11
10. Wings somewhat yellowish; abdomen above finely pilose, not shining.....*obductus*
Wings not yellowish; abdomen above largely shining, and white bands scarcely noticeable.....*maestus*
11. Tibiae black (with silvery sheen); body very largely silvery
ermineus
Tibiae rufous or yellowish..... see no. 7 of *Tachyplena* p. 406

Females with a whitish or silvery pygidium

1. Tibiae pale; long spur of hind tibiae longer than basitarsus, at least a little. 2
Tibiae black; long spur of hind tibiae not longer than basitarsus. 3
2. Propodeum with more yellowish pubescence; second, third, and fourth silvery bands bending forward toward middle, away from hind margin of the segment. *belfragei*
Propodeum with more grayish pubescence, all bands following the hind margin of segment. *calcaratiformis*
3. Abdomen reddish on first two segments above, although not wholly so; gray hair on propodeum, hair on basal abdominal segment very short. *cressoni*
Abdomen wholly black; white hair on propodeum; hair on basal segment of abdomen moderately long. *foxi*

Females with three spines on hind
basitarsus, and hind femora bare

1. Abdomen with silvery bands on but two segments; wings very dark; pygidium bronzy. *aurulentus*
Abdomen with silvery bands on only three segments; pygidium bronzy. 2
Abdomen with silvery bands on four segments, or the abdomen partly rufous. 4
2. Legs, including tibiae and most of tarsi, black; some specimens of. *obscurus*
Legs with tibiae rufous or pale. 3
3. Femora largely yellowish or rufous. *elongatus*
Femora black, except tip. *austrinus*
4. Femora yellowish or rufous; abdomen partly rufous. *exornatus*
Femora black, and usually tibiae. 5
5. Abdomen at least partly rufous. 6
Abdomen black. 10
6. Pygidium bronzy. 7
Pygidium golden. 8
7. Silvery pubescence on pleura. *fulviventris*
Little if any silvery pubescence. *utahensis*

8. Third antennal joint scarcely longer than fourth; abdomen almost wholly yellowish, some specimens of *rufofasciatus*
Third antennal joint plainly longer than fourth; abdomen with apical half black 9
9. Hair on propodeum above extremely short *brevipilis*
Hair on propodeum moderately long *hesperus*
10. Thorax with much silvery pubescence; hair above on propodeum very short *sericatus*
Thorax almost devoid of silvery pubescence; hair above on propodeum moderately long 11
11. From Kansas and Nebraska west *sayi*
From Illinois east and south *pepticus*

Males of subgenus *Tachyplena*

1. Tibiae largely black 11
Tibiae mostly rufous 2
2. Hind and mid tarsi without spines or only minute ones 3
Hind and mid tarsi with normal spines 5
3. Wings plainly yellowish; hair and pubescence of thorax plainly golden *distinctus*
Wings not so plainly yellowish; hair more white or gray 4
4. Eighth ventrite ends in widely separated points; sixth ventrite without short erect hair each side *mandibularis*
Eighth ventrite with points closer together; sixth ventrite with patch of short, erect, black hair each side *crassus*
5. Only three segments bordered with silvery; face bright golden *auricomans*
Fourth segment with silvery 6
6. Some segments near tip with a tuft of hair each side on venter, sometimes a trace of a fifth band on abdomen 7
No tufts of hair on venter near tip, nor any silvery on fifth segment 8
7. With two tufts each side (sometimes rubbed); last ventrite ends with a very narrow notch in middle, late summer *harpax*
With but one tuft each side; eighth ventrite has a broad triangular excision between the large, triangular teeth; early summer *columbiae*

8. Next to last ventrite with an apical, transverse band of dense, erect, dark hair; face whitish; third joint of antennae longer than fourth; last ventrite ends in a broad triangular median excision.....*validus*
No such band of hair, or face golden.....9
9. Face golden; third antennal joint scarcely longer than fourth; wings yellowish.....*praedator*
Face whitish; third joint of antennae plainly rounded below...10
10. Third joint of antennae hardly longer than fourth; no distinct median process to clypeus; eighth ventrite ends in broad, blunt tooth each side; southern.....*calcaratus*
Third antennal joint longer than fourth; clypeal margin with a small, median, bilobed process more or less distinct; eighth ventrite with the teeth plainly more pointed; northern
calcaratiformis
11. Hind femora hairy below to tip; parameres slender tapering to a fine tip.....12
Hind femora hardly hairy beyond middle, parameres broad, flattened.....13
12. Mesonotum not bordered with pale pubescence.....*floridanus*
Mesonotum bordered with pale pubescence.....*ermineus*
13. Parameres broad at tip; third joint of antennae hardly twice as long as the second.....*comanche*
Parameres pointed at tip; third joint of antennae plainly more than twice as long as the second.....*badius*

Males of subgenus Tachytes

(joints of antennae not rounded below)

1. Front femora with a groove across base on under side; front coxae with projection at tip.....2
Front femora without such groove; front coxae without projection.....7
2. Tibiae yellowish or rufous.....3
Tibiae black.....5
3. Abdomen above with some reddish in bands.....*rufofasciatus*
Abdomen black, except silvery bands.....4

4. Four silvery bands on abdomen; hind femora partly black
elongatus
 Three silvery bands on abdomen; hind femora nearly wholly
 rufous.....*seminole*
5. But three bands on abdomen; wings very dark on costal part
aurulentus
 Four silvery bands on abdomen.....6
6. Third joint of antennae longer than fourth; front side of hind
 basitarsus without spines near middle; wings yellowish...*apache*
 Third joint of antennae scarcely equal to fourth; a spine on front
 side of hind basitarsus near middle; wings hyaline...*sericatus*
7. Abdomen more or less reddish on basal part.....8
 Abdomen wholly black, except the silvery bands.....13
8. Eleventh joint of antennae widened on inner side, next joints
 more slender.....*fulviventris*
 Eleventh joint not widened at tip.....9
9. Twelfth and thirteenth joint plainly broadened, thirteenth
 hardly twice as long as broad at base.....*spatulatus*
 These joints not noticeably broadened, the last tapering....10
10. Tibiae and hind femora reddish.....*exornatus*
 Tibiae and hind femora black.....11
11. But two segments reddish.....*basirufus*
 Three segments reddish.....12
12. Thorax and tip of abdomen deep black.....*utahensis*
 Thorax and tip of abdomen grayish black.....*hesperus*
13. Eleventh joint of antennae widened at tip; Eastern species
pepticus
 Eleventh joint not widened at tip; Western species.....*sayi*

Males of subgenus *Tachynana*

1. Tibiae and tarsi yellowish.....2
 Tibiae black, tarsi often partly dark.....3
2. Face with no erect hair, only short fine pile; base of abdomen
 reddish above; groove of posterior slope of propodeum widened
 above.....*pattoni?*

- Face with erect white hair; no reddish on abdomen; groove of posterior slope of propodeum not noticeably widened above
minor
3. Hair on vertex about as long as scape of antennae . . . *hirsutifrons*
Hair on vertex shorter 4
4. Abdomen with silvery bands on but three segments; groove on posterior slope of propodeum widened above; hair in ocellar region white *parvus*
Abdomen with some white or yellowish on sides of fourth segment 5
5. Abdomen with some white or yellowish hair on sides of fifth segment also 6
No white or yellowish hair on sides of fifth segment 7
6. Abdomen shining; hair on vertex moderately long *maestus*
Abdomen dull; hair on vertex very short *obductus*
7. Antennae very short, fourth and fifth segments and most of these beyond not twice as long as wide at tip; very small, 5 to 7 millimeters 8
Fourth and fifth and some other joints of antennae fully twice as long as wide at tip 9
8. Groove on posterior slope of propodeum widened V-shape above
minutus
Groove on posterior slope of propodeum not noticeably widened above *amiculus*
9. Vertex width hardly more if any than one-third the basal width of face *Tachyoides mergus*
Vertex width much more than one-third basal width of face . . 10
10. Face with silvery hair above antennae quite long; tarsi mostly dark; a bunch of short brown hair each side on ventral segments near tip of abdomen *obscurus*
Face with dense silvery appressed hair, little erect above antennae; tarsi beyond basitarsus usually pale; abdomen more shining above, shorter hair on basal segment *intermedius*

Genus TACHYTES

Subgenus TACHYPLENA

TACHYTES MANDIBULARIS Patton

Common in the Eastern States, mostly north of Carolina, but one specimen from Florida. Specimens from Nebraska, Colorado, and Texas have more yellow on the femora and are usually larger, and represent *T. propinquus* Rohwer; I saw the type in the National Museum. Males from Nebraska externally appear the same as eastern specimens, but preparations of the internal genitalia may show differences. The type (National Museum) of *T. duplicatus* Rohwer from Florida seems to be *mandibularis*.

TACHYTES VALIDUS Cresson

It was described from Texas, the female with golden pubescence on the face, and the apical segment (pygidium) bright golden. Fox says face with bright silvery pile and pygidium clothed with silvery pile, but in the Belfrage collection in the National Museum are specimens marked as type which agree with the Cresson description; these, I believe, are the true *T. validus*. It would appear that the specimens at Philadelphia are not types; and that there has been some mixup.

TACHYTES BREVIVENTRIS Cresson

In the M. C. Z. collection are two male Tachytes purchased by Packard from Belfrage (along with other Fossorial Hymenoptera). The smaller one has on pin "420", and a long folded label "420. Tachytes breviventris Cress. n. sp.". The other has on pin "418", and on the long folded label "418. Tachytes validus Cress. n. sp.". The smaller has more rufous on femora, otherwise they are alike; the eighth ventrite ends in two lobes, rather near together; on the sixth ventrite a low brush of dark brown erect hair, each side on fifth ventrite a small patch of similar hair, but hardly as high. The clypeus is the same in both, so I consider *T. breviventris* a synonym of *T. validus*.

TACHYTES CALCARATUS Fox

Described from Florida and New Jersey; I have seen the types in the National Museum. I have examined specimens from Miami, De Fun-

iak Springs, and Monticello, Florida, all taken in October, also from Raleigh, in September, Sanford and Aberdeen, all North Carolina, and the last two taken in October.

It is very close to *T. calcaratiformis*, but the female with a distinctly golden pygidium, and the male lacks the bilobed process on clypeal margin, and the third antennal joint scarcely longer than the fourth.

TACHYTES CALCARATIFORMIS Rohwer

Described from Van Cortlandt Park, New York City; I have not seen the female type, but Rohwer says it is like *T. calcaratus* except the pygidium is more silvery. This form is common in southern New York; specimens seen from Bronx Park and Bronxville, New York City, Sandy Hook, Long Island, Fisher's Island, Gardiner's Island, Mosholu, Nyack, and New Baltimore, New York, also from Provincetown, Cambridge, Needham, Mass., and Narragansett, Rhode Island. Externally the male appears to be the same as *T. calcaratus*, having the same spine-like process on each side of base of the eighth ventrite and this ventrite ending in lobes with convex outer sides.

TACHYTES CALCARATIFORMIS var. COLORADENSIS var. nov.

In color and markings similar to the typical form, the pygidium is white, the clypeal projection is a little broader and not as plainly bilobed; the pygidium has a longer slender apical part.

In the male the third antennal joint is hardly a bit longer than the fourth (in *calcaratiformis* plainly longer) and as much rounded below as the fourth; the tip of the eighth ventrite is narrower than in the typical form, and the lobe each side is more pointed.

Length ♀ 13 mm., ♂ 11 to 12.5 mm.

Holotype, Boulder, Colorado, August (Carpenter), M.C.Z. no. 25629; paratypes from White Rock, near Boulder, 13 August, and Wray, 17 to 19 August, both Colorado, in Amer. Mus. Nat. Hist. and M.C.Z.

TACHYTES BELFRAGEI spec. nov.

This, I believe, is what Fox in his Revision calls the female of *T. validus*, with silvery pile on face and pygidium.

It is near to the northern *calcaratiformis* and to *calcaratus* (except in silvery pygidium). Face with silvery white hair, thorax with white hair and pubescence; abdomen with four silvery bands; these bands

do not follow the hind margin of the segment all across, but near middle bend forward; the pygidium white; femora black, rest of legs rufous; wings yellowish as in allied forms. The third joint of antennae is plainly longer than the fourth; the propodeum has a median groove above; hind basitarsus has two spines above, not as long as those of *calcaratiformis*, the front basitarsus has five or six spines; propodeum densely long-haired; the pygidium has straight sides (in *calcaratiformis* a little concave before tip).

Length ♀ 17 mm.

From Texas (Belfrage coll.) (Peabody Acad.). Acquired by Packard when he was at the Salem institution. Type M. C. Z. no. 25630.

TACHYTES HARPAX Patton

Described from Waterbury, Conn., from both sexes, the female with golden pygidium; Wheeler took many at Colebrook, Conn. Fox puts as female one with silvery pygidium, probably *calcaratiformis*. This, doubtless, led Rohwer to describe *dubitatus*, which appears to be a female of *harpax*, but I have not seen the type.

Other specimens are from Englewood, New Jersey, Falls Church, Virginia, Lexington, Holliston, Dorchester, Scituate, and Wellesley, Mass.; North Conway, New Hampshire; Milwaukee, Wisc.; and Midland County, Michigan; mostly taken in late July, August, and September. Some males show traces of a white band on the fifth segment.

TACHYTES COLUMBIAE Fox

This species is closely related to *T. harpax*. The hind femora are hairy below, hind basitarsus with two spines, front basitarsus with five; dorsal groove sometimes indicated, not as plain as in *mandibulatus*, *praedator*, etc. In most males there is a narrow white band at tip of fifth segment, at least on sides. The eighth ventrite has two sharp, triangular teeth at tip, rather near together.

Specimens have been taken at Falls Church and Glencarlyn, Virginia, in June and July; Beltsville, Maryland, 6 July; Da Costa, New Jersey, 28 July; Raleigh, 28 May, 8 June, Judson, 19 July, and Edgecombe Co., 23 June, all North Carolina.

TACHYTES PRAEDATOR Fox

This is one of the most brightly marked species, the golden of head and pygidium being very bright; the bands on abdomen are usually

slightly golden, sometimes strongly so; the wings more or less yellowish. The legs are largely yellowish, the front and mid femora often not one half black, and the hind femora black only near base. The hind femora are plainly hairy below, the hind basitarsus with two spines, the front with five, and a distinct dorsal groove on the propodeum. In the male the antennae are simple, the eighth ventrite rather slender and with two broad blunt teeth not far apart; hind tarsi with spines at tips of joints, the basitarsus with two or three other spines. It is not uncommon at Fedor, Texas; also found at Beltsville, Maryland, 6 July; Wilmington and Raleigh, North Carolina, early July; and a male from between Climax and Bainbridge, Georgia, 28 July (Amer. Mus. Nat. Hist.).

TACHYTES FLORIDANUS Rohwer

I examined the type from Florida in the National Museum. It is much like a small *T. pepticus*, but the hind femora have distinct, though fine, white hair below, another male agreeing with this is from Southern Pines, North Carolina, 17 May (American Museum Natural History), another from Southern Pines, 29 May (N. Car. Dept. Agric.), one from Aberdeen, North Carolina, 29 May (N. Car. Dept. Agric.). The apical portion of antennae simple, the third joint a little longer than fourth; the hair on propodeum and basal segment of abdomen is long and white; the surface of propodeum shining; its posterior slope has a very broad triangular depression. I have seen no female to fit it.

TACHYTES ERMINEUS spec. nov.

Body and legs black; face densely covered with silvery white pubescence and erect hairs; antennae with silvery bloom, third joint plainly longer than the fourth, last joint tapering; thorax and propodeum with silvery pubescence and white hair; hair on mesonotum as long as that on vertex, that on propodeum very dense and longer; abdomen above with four fairly broad silvery bands, faintly interrupted in middle, basal parts of these segments with a silvery sheen, fifth segment at tip narrowly rufous, with black and some rufous hair; pygidium moderately slender, densely covered with appressed pale golden hairs, the dark margin of pygidium very prominent.

Front and mid legs behind with much appressed and some erect white hair, hind femora shining, but with some fine white erect hairs below; outer side of hind tibia and three joints of tarsus bright silvery, the spines here, as elsewhere, pale yellowish, on hind tibiae not extend-

ing on basal third; on upper edge of hind basitarsus but two spines before tip; front basitarsus with four rather long spines, and those on the next two joints still longer and very slender. Wings hyaline, veins yellowish, third submarginal cell extending beyond the marginal, the recurrent veins not especially close above. Clypeus broadly rounded below, no prominent teeth, but the lateral one distinct.

Male very similar in appearance; third joint of antennae a little longer than fourth, last joint tapering; legs with hair as in female, the hind femora with distinct fine white hair below; spines on legs more whitish; abdomen does not show the silvery sheen on basal part of segments, last segment wholly black, pygidium rather more tapering than usual; eighth ventrite with two moderately large triangular teeth nearly touching at inner base.

Length female 13 mm., male 11.5 mm.

From Lower Ranger Station, Pima Co., Catalinas, Arizona, 6 to 20, and 15 to 21 July, about 2700 ft.

Type and allotype in American Museum Natural History, paratype in M. C. Z. 25633.

T. ermineus bears a very close resemblance to *T. sericatus*, but is separated by the pale golden pygidium (bronzy to coppery in *sericatus*), with but two spines above on hind basitarsus (three in *sericatus*), and by the hind femora hairy below (bare in *sericatus*).

TACHYTES CRASSUS Patton

The hind femora are hairy below; two spines on hind basitarsus above, usually five on front basitarsus; a distinct groove on propodeum above. In male the hind tarsus has few if any spines; the eighth ventrite ends in two large triangular teeth, and before tip are tufts or brushes of short erect black hair (in *mandibularis* no such tufts, and eighth ventrite ends in two more widely separate points). In both sexes the abdomen appears black with scarcely noticeable silvery bands, these being narrow; in *mandibularis* the bands are distinct in both sexes.

Specimens seen from Wollaston and Waltham, Mass.; from Washington Co., Wisconsin; and Cambridge, Nebraska.

TACHYTES AURICOMANES Bradley

The types (two males), which I have examined, are similar, as Bradley states, to *T. crassus*, but differ in having but three silvery bands on

abdomen, the fourth segment wholly black, and the hind tarsi with the spines at tips of the joints. Face golden; mesonotum not as prominently bordered with golden as in *T. distinctus*, propodeum with golden pile and long gray to yellowish hair; basal segment of abdomen with long white hair on basal part; femora black, but extreme tip and rest of leg beyond rufous. Hind femora with very distinct pendent hair on under side; no spine on outer side of hind basitarsus, none above; long spur of hind tibia not nearly equal to basitarsus.

Third antennal joint little longer than fourth, the fourth, fifth, sixth, and seventh joints a little rounded below.

On the sixth ventrite there is short erect hair across, not plainly higher and denser at each side; the eighth ventrite ends in two large, rather sharp pointed, triangular teeth.

Length 14 to 16 mm.

From Oglethorpe, Ga., 1 July (J. C. Bradley), in Cornell University collection.

This might be the true *T. distinctus* Smith, but Smith states that the mesonotum is bordered with golden, a character not so obvious here as with the insects I have interpreted as *T. distinctus*.

TACHYTES DISTINCTUS Smith

This is the species, similar to *T. elongatus*, but with black femora, which Smith described from Georgia. Fox applied the name to Smith's "var. B", which is *elongatus*; the name must go with the typical form. I append a new description.

♀ Body dull black; face with yellowish to golden pubescence; antennae, including scape, black; mesonotum margined with yellowish pubescence, also each side of scutellum; on front part of mesonotum are two elongate, slightly separated silvery or yellowish spots of pubescence; pleura with a large spot of yellowish to golden pubescence; propodeum with rather long gray to yellowish hair, on each side an elongate patch of golden pubescence; abdomen with three silvery bands, about as broad as in *T. elongatus*, base of first segment with long white hair; pygidium bronzy to coppery. Femora black, except extreme tip, which with the tibiae and tarsi are fulvous; front and mid femora with appressed yellowish hair behind, outer side of hind tibiae golden; wings plainly yellowish with brownish yellow venation.

Face much narrowed above, vertex hardly wider than width of antennal bases; third joint of antennae plainly longer than fourth; clypeus with two small teeth each side; scutellum with a faint groove

behind; propodeum with median groove above; pygidium much as in *T. elongatus*; front basitarsus with four spines before tip, hind basitarsus with two spines above before tip, but none on outer side, spines at tips of tarsal joints of usual length; inner spur of hind tibia about as long as basitarsus; all femora hairy below, the hind femora with rather short, fine white hair.

The male is similar in color, but face more golden, and no submedian spots on mesonotum; four silvery bands, all narrow, and that on fourth segment only toward sides and very narrow; pygidium silvery; legs with femora more broadly fulvous at tip; the hair on mesonotum very short and gray.

Clypeal margin with three or four small teeth each side; antennae with fourth, fifth, sixth, and seventh joints convex below and slightly concave above. Mid and hind tarsi almost without spines, tips of one or two joints with one or two very short ones, and basitarsus with two or three minute ones above. Eighth ventrite ends in two teeth, scarcely sharp, rather far apart at tips, close together at base. On the sixth ventrite is a tuft of black hair each side, between the tufts the hair is lower, and less dense.

Length female 18.5 mm.; male 16 mm.

Female from Nome, Liberty Co., Texas, 22 June (Bequaert), male from Shierer, Terrebonne Co., Louisiana, 18 June (Bequaert); Raleigh, N. C., 12 July, Maysville, N. C., 11 July, and Marion, N. C., 8 July, taken by Brimley and Mitchell.

TACHYTES FOXI spec. nov.

Body, legs, antennae dull black, last tarsal joints rufous; abdomen above with an apical silvery band on four segments; tibial spurs rufous; the spines on tibiae and tarsi white. Wings clear, veins fulvous.

Face and pygidium white; moderately long white hair on thorax, propodeum, and basal segment of abdomen; longer white hair on face, and short dark hair on vertex. Third joint of antennae plainly longer than the fourth; middle of clypeal margin slightly but broadly projecting and nearly truncate, no distinct lateral teeth; propodeum above without a median groove, the apical pit connected to the broad furrow on posterior slope.

Pygidium moderately broad at base, apex rounded. All femora have some white hair below; on hind basitarsus are but two spines before the tip; the inner spur of hind tibia as long as the basitarsus.

Length, ♀, 12 mm.

Two females from Fedor, Lee Co., Texas, 6 May, 1909, and 17 May, 1898 (G. Birkmann). Type M. C. Z. no. 25634.

TACHYTES COMANCHE spec. nov.

Male. Black, legs black, except apical tarsal joints; face and base of mandibles with white hair; no silvery on pleura; hair on mesonotum short and dark, on propodeum long and white. Under hind femora there is some hair at least to middle. Four segments of abdomen with silvery apical band. Propodeum shows an apparent dorsal groove; antennae short, third joint a little longer than fourth. Eighth ventrite ends in two triangular points, rather far apart. Parameres are broader at tip than in *badius*; at the subbasal outer angle there are two long stout bristles, and in front for a short distance the edge is slightly concave; beyond are other, shorter bristles.

Length 12 mm.

From Fedor, Lee Co., Texas, 8 and 11 May (Birkmann). Type M. C. Z. no. 25694.

TACHYTES BADIUS spec. nov.

Black body, also antennae and legs except the pale last tarsal joint; wings hyaline. Face silvery, lower part of occiput also, mesonotum bordered with silvery, also pleura, posterior sides of propodeum, and four bands on abdomen; femora silvery below, and mid and hind tibiae above; pygidium coppery; long white hair on upper part of face, on propodeum, and on basal segment of abdomen. Clypeus with a slight process, rounded below, and somewhat sinuate each side before the lateral angle; third antennal joint a little longer than fourth; no median groove on propodeum above, behind with a moderately wide groove; pygidium moderately broad, with plainly convex sides and almost pointed tip; front basitarsus with four spines above before tip, hind basitarsus with three spines; spines on hind tibiae pale, slender; inner spur of hind tibiae equal to basitarsus; hind femora distinctly hairy below, as also other femora.

Length, ♀, 13 mm.

One female from Anhalt, Comal Co., Texas, 28 June (Bequaert). Type M. C. Z. no. 25632.

It differs from *T. pepticus* in hairy hind femora, clypeal margin, white border to mesonotum, small pit on propodeum, and in hair on

basal segment of abdomen about twice as long as in *T. pepticus*. The male, which I believe belongs to this species, since it has hair on under side of hind femora and occurs in the same region, is generally similar to *pepticus*, with short dark hair on mesonotum and long white hair on the propodeum. The third joint of antennae is a little longer than the fourth, the tenth and eleventh not broadened; the hind femora have white hair below, not dense, and little, if any, on apical third; the eighth ventrite has a large, rather sharp-pointed tooth each side, the emargination rather deep. The apical part of the paramere is broad, flattened above, angulated near base on outer side, and in front of this angulation a row of stiff, curved hairs, the lower margin (seen from side) is nearly straight; the penis has the tip very slender (seen from above), and not swollen much near middle.

Length of ♂ 11 to 12 mm.

From Lee Co., Texas, 17 May; Florence, Arizona, 28 July; Mesilla Park, New Mexico, 12 July; Colton, California; and Lowell Ranger Station, Pima Co., Arizona, 6 to 20 July (A.M.N.H.).

Subgenus TACHYTES

TACHYTES AURULENTUS Fabr.

This large dark-winged species is readily known by having but two silvery bands in the female, and but three in the male. The femora are bare; the femora and tibiae dark, tarsi more or less rufous; the pygidium bronzy to black. The hind basitarsus (♀) has three spines above, front basitarsus with five before the apical one; the pit on the propodeum extends forward more than in many species, but there is no real dorsal groove; the antennae of the male not modified.

It is found in the Southeastern States, but has been recorded from New Jersey, and I have taken it at Falls Church, Virginia; collecting dates are usually from the end of July to end of September.

TACHYTES ELONGATUS Cresson

This species was regarded by Fox as the male of *distinctus*. Smith had two forms under *distinctus*, one, the principal description, with black femora, and a "variety B" with yellowish femora. Fox admits his *distinctus* is the variety B. However, the specific name cannot be applied to the variety. As localities Smith gave Philadelphia and Georgia. Smith's description of black femora agrees with a southern

species. Thus *elongatus* remains as the name of the common and widespread species which has been called *distinctus*, and the name *distinctus* must be applied to the form that is similar to *elongatus* but has the femora black. In the male the paramere has a large fringe of long spreading hairs or bristles at outer tip. It is most common in the Southern and Southwestern States, Texas to California, in the East rarely north of Washington, D. C., but in the West north to Nebraska and Colorado. Most of the far western males seen are smaller than the eastern ones.

TACHYTES ELONGATUS var. SEMINOLE var. nov.

Males. Similar to male of typical form, except that there are but three silvery bands on abdomen, and the hind femora are almost wholly rufous, and the amount of rufous on front and mid femora is more than in typical form. These markings are like those in the female of *elongatus*, rather than the male; hair on face white (instead of dull golden in *elongatus*). The eighth ventrite ends in two slender points far apart, the parameres have heavier bristles at tip than in *elongatus*, and more spreading.

Length 14 to 14.5 mm.

From South Miami, 13 August and Larkins, Florida, Oct. (both Graenicher). Type M. C. Z. no. 25692. Also one from Dry Tortugas, Florida (Thompson), Amer. Mus. Nat. Hist.

TACHYTES ELONGATUS var. APACHE var. nov.

Males. The two specimens are smaller than any *T. elongatus*, although size is variable. The femora are entirely dark (pale at extreme tip in *elongatus*); the tibiae also dark, except tip of front and mid pairs (wholly pale in *elongatus*), and tarsi partly darkened; hair on face and base of mandibles silvery white, and long white hair on propodeum. The body is slender as in *elongatus*, and the bristles on parameres similar.

Length 12 mm.

From Patagonia, Arizona, 20 August (Bequaert); and Tucson, Arizona (Snow). Type M. C. Z. no. 25693.

TACHYTES AUSTRINUS nom. nov.

T. contractus Fox is preoccupied by *T. contractus* Walker 1871, so a new name is necessary. Besides the type of *T. contractus* Fox I have seen but one female, this from Monticello, Florida, 16 August.

The hind femora are bare; three spines above on hind basitarsus, four on front basitarsus and no groove on dorsum of propodeum.

TACHYTES SERICATUS Cresson

Described from Texas. I have females, but no male that appears to belong to it. The female has very short hair on propodeum above and on basal segment of abdomen. The pygidium is bronzy, but in one view could be called "dull silvery." The hind femora are bare, and the hair under mid femora is very short; hind basitarsus with three spines above, front basitarsus with four.

My females are from Fedor, Lee Co., Texas, June to August.

The male, which has been considered as that of *T. sericatus*, is much more slender than the female; face with snow-white hair, little above antennae; hair on thorax very short, but only slightly silvery; propodeum also with rather scant short hair on sides, above rather long and pale, on lower sides silvery; legs, with tarsi, mostly black, spines whitish, one near middle of outer side of hind basitarsus; abdomen shining; silvery bands on four segments; very short hair on basal segment, but longer on anterior sides.

Third antennal joint a little shorter than fourth; vertex rather narrow; groove on propodeum widened, but not so much as in female. Abdomen slender, eighth ventrite ending in two slightly divergent slender prongs; long spur of hind tibiae not quite as long as basitarsus.

From above the parameres are flat, moderately slender, and obliquely narrower from outer side to tip. Seen from the side, the laciniae are long, the short apical part apparently separate, with a rounded lobe above near base; the lower side of laciniae fringed with long, fine hair.

Length 10 to 11.5 mm.

From Fedor, Texas, Valentine, Texas, 8 July, and Steins, New Mexico, 14 July (Bequaert).

TACHYTES PEPTICUS Say

Say gives Indiana as locality; in the collection of the American Museum of Natural History is a male from Lafayette, Indiana; this male agrees with Say's description in having the pubescence of face and the spot at base of mandibles somewhat golden, from above only is the face white. Prof. Brues has taken various other specimens near Chicago and northern Illinois, Graenicher had a pair from Milwaukee, Wisconsin, and Dreisbach has taken it in Michigan.

These are all easily separable from western specimens by the male genitalia and the marks of head when not discolored; the points of the eighth sternite are more widely separated. In the male the tenth and eleventh joints of the antennae are plainly broadened, the tip of eleventh being broader than base of the twelfth.

The specimen (♂) from Lafayette, Indiana, 16 Aug. 1920, about 550 ft. alt., I make the neotype; it is in the Amer. Mus. Nat. Hist.

Besides the localities mentioned, I have seen specimens from Woods Hole, Massachusetts; Southern Pines and Raleigh, North Carolina; Miami, Florida; Auburn, Alabama.

I consider *T. pennsylvanicus* Bks. based on males from Rockville and West Fairview, Pa., July and August, as at most a form of *pepticus*. At the time of description I had not seen the true *pepticus*, and Fox used *pepticus* for the western species here described as *sayi*. The specimens seen, types and some from St. Louis, Mo., one from Kentucky (Sanborn), are larger, and the eighth ventrite is plainly proportionally broader than in the typical *pepticus* from the Central States; the male from Woods Hole is somewhat intermediate, and none of the eastern males seen have as narrow an eighth ventrite as the typical form. Compared with the width of face below the vertex is narrower than in the true *pepticus*. The parameres are broader toward tip seen either from above or from side than in typical *pepticus*, and less sharp-pointed, but in *pepticus* there is some variation, so I leave it as a variety or form of *pepticus*. I have seen no eastern females that would go with it. The males from Fedor, Texas differ slightly from typical *pepticus*. (See Fig. 12.)

TACHYTES SAYI spec. nov.

This is the western representative of *pepticus*, which Fox treated as *pepticus*. The male is separated from *pepticus* by having the base of mandibles with white pubescence and the hair on face silvery white in most views, except directly in front. The hair on propodeum is fully as long as in *pepticus*. The tenth and eleventh joints of antennae are not widened, and the twelfth not narrower. The body (phallus) of the male genitalia is more slender than in *pepticus*, the parameres, though curving slightly, are not nearly so curved nor so widespread as in *pepticus*; the tip of each paramere is truncate; the penis is moderately slender near tip but not so noticeably widened near middle as in *pepticus*; the eighth ventrite ends in a triangular tooth each side, the two not so far apart as in *pepticus*. The bands and amount of thoracic pubescence are about as in *pepticus*.

Length of ♂ 10 to 12 mm.

The holotype is from Clear Creek, Colo., taken many years ago by Oslar. Others from the same locality; Cambridge and Bartley, Nebraska; Hot Springs and Buffalo, S. Dakota; and Lee County, Texas, where dated all in July; also Provo, Utah, 20 July to 1 August; and Jim Creek, near Boulder, Colorado, 3 August (A.M.N.H.). Type M. C. Z. no. 25673.

The females differ little from *pepticus*, and I see no structural difference. Specimens are from Berkeley, Colorado; Elmo, Kansas; Canton, S. Dakota; and Spokane, Washington, mostly August.

TACHYTES FULVIVENTRIS Cresson

This was described from a female, Colorado. The type has long hair on propodeum. The hind femora are bare; the hind basitarsus has three spines above, the front four. The abdomen has three segments rufous. Specimens before me are from Dragoon Mts., 20 July and Bonita, 12 July, both Arizona, taken by Bequaert; Sierra Blanca, El Paso Co., 8 July, and Valentine, 8 July, both Texas and by Bequaert; Davis, Calif., 30 June (Bohart); Finney Co., Kansas, August (Snow). Also in American Museum from La Junta, Colo., 12 August; Wray, Colo., 17 August; Crook, Colo., 24 August; Sabino Basin, Ariz., 8-20 July, and Marfa, Tex., 3-6 July. Recorded from Nebr., Mont., and Wash.

TACHYTES FULVIVENTRIS var. INFERIORIS var. nov.

This form is distinguished by having but two segments of abdomen rufous; the hair on propodeum is as long as in the typical form, and other characters similar.

Length 12 to 13.5 mm.

This is the variety found in Lafayette, Indiana and northern Illinois. Type M. C. Z. no. 25695, also paratype in Amer. Mus. Nat. Hist., and two in the Birkmann collection without locality, possibly Texas.

TACHYTES BREVIPILIS spec. nov.

In appearance much like *T. fulviventris*, the first three segments of the abdomen being rufous, but the hair on the propodeum is not one half as long, and the pygidium is golden not bronzy. The hair on vertex is also only about one half as long as that of *fulviventris*; the

third joint of antennae is a trifle longer than the fourth, not as much so as in *fulviventris*. The hair on face and clypeus is plainly yellowish, not the silvery of *fulviventris*. There is some silvery pubescence on each side of the propodeum toward tip; on the base of the first abdominal segment the hair is also short. The legs are black, but three or four tarsal joints rufous; the hind femora are not hairy below, and the other femora have a silvery pubescence below; there are four spines on the front basitarsus before tip, and three on the hind basitarsus as in *fulviventris*; the long spur of hind tibia is equal to the basitarsus.

Length 15 to 17 mm.

Three females from Lee Co., Texas, June (Birkmann). Type M. C. Z. no. 25636. The male is not yet known.

TACHYTES HESPERUS spec. nov.

Body black, first three segments of abdomen rufous; the hair on face is grayish; there are some patches of silvery on pleura and propodeum but not prominent; the pygidium is yellowish to golden. The clypeus is rounded below, with a few small teeth each side; the third joint of antennae a little longer than the fourth; the hair on propodeum is white, almost as long as in *fulviventris*, there is no median groove on dorsum, the pit is crossed by fine striae. There are four spines on front basitarsus before tip, three on hind basitarsus above as in *fulviventris*. The wings are hyaline, venation yellow-brown, the third submarginal cell extends beyond the marginal; no hair under hind femora.

The male is similar, but hair on face is white; the third joint of antennae is little longer than the fourth, the third joint from tip not widened and the apical joint slender and tapering. The eighth ventrite with narrow points and widely separated, more so than in *basirufus*.

From *fulviventris* the female is separated by the pale pygidium; from *brevipilis* by having much longer hair on propodeum. The male is separated from *spatulatus* and from the male accredited to *fulviventris* by the unmodified apical segments of the antennae, as well as by the shape of the eighth ventrite.

Length ♀ 14 to 16 mm., ♂ 12 mm.

Several from Spokane, Washington, 21, 22 July, Yakima City, Washington, 2, 3, 4 July, and Umatilla, Oregon, 24 June, all taken by Samuel Henshaw in 1882; also from Oregon, in the American Museum of Natural History. Types in M. C. Z. no. 25637; paratypes there and in A.M.N.H.

TACHYTES UTAHENSIS spec. nov.

Black like *T. pepticus*, with silvery face and hardly any pale pubescence on pleura, but the first three segments of abdomen are rufous above and below. There is more and longer erect hair on each side of the face; the hair on propodeum is long like *pepticus*, and the pygidium is bronzy. The sides of pygidium are slightly concave. The propodeum above has no median groove, the apical pit is striated across bottom and connected to the broad, but tapering groove on the posterior slope. The hind femora are not hairy below; there are four spines on the front basitarsus and three on the hind basitarsus; the inner spur of hind tibia is almost equal to basitarsus. The wings are hyaline, veins brown, the marginal cell is more than four times as long as broad, longer than in *pepticus*, the third submarginal reaches beyond the marginal. The clypeus is rounded below, with an obtuse tooth each side.

The male is similar, but smaller and more slender, three segments rufous; third antennal joint not longer than the fourth, last joint tapering; the eighth ventrite shows two sharp points rather widely separated.

Length ♀ 15 mm., male 12 mm.

Type female from Watson, Utah, 29 July (Carpenter), M. C. Z. no. 2563S. Allotype male from Provo, Utah, 29 July to 1 August, American Museum of Natural History. Paratypes from Eureka, Utah, 13 to 21 July, Glenwood Springs, Colorado, 22 to 29 July, and Yellowstone National Park, 4 August, in M. C. Z. and A.M.N.H.

TACHYTES EXORNATUS Fox

Described from a male from Las Cruces, New Mexico. It is our most handsome species.

The female (allotype) has the body and legs marked as in the male, and likewise the wings are yellowish and darker at tip. The pygidium is covered with dense, fine, bright golden hair. There are two spines on hind basitarsus above, four on front basitarsus; hind femora without hair below; no median groove on propodeum above, and third joint of antennae plainly longer than the fourth.

Length of female 16.5 to 18.5 mm.

Allotype from Tempe, Arizona, 2 August (Bequaert), another, same locality, 1 August, and one from Sabino Basin, St. Catalina Mts., Arizona, 8 to 20 July (American Museum of Natural History).

TACHYTES RUFOFASCIATUS Cresson

Described from a male from Texas (Belfrage). Common at Fedor, Lee Co., Texas, in May and June. Also from Auburn, Lee Co., Alabama, 9 June; Southern Pines, North Carolina, 7 June; MacCollum, Couseta Co., Georgia, 8 June; Monticello, Florida, 25 May; and also from Davis and Colton, California; the latter rather larger, but appearing to be the same species. The males of *rufofasciatus* are usually quite dark, with paler bands, the female usually has the abdomen entirely rufous or yellowish. The wings always show somewhat yellowish, and the pygidium broader at base than in allied species.

TACHYTES CRESSONI spec. nov.

Black; face and pygidium silvery; first and most of second abdominal segment dull rufous; abdomen above with four silvery bands; legs black, last few tarsal joints reddish; spines on tibiae and basitarsi white; upper surface of mid and hind tibiae silvery; femora only slightly hairy; head with white hair on face, darker on vertex, short and brownish on mesonotum; moderately long and gray on propodeum; upper part of sides of propodeum with white pubescence, rather faint except at tip; pleura and sternum with white hair. Wings scarcely yellowish, the veins yellow. Clypeus slightly swollen below, and slightly emarginate in the middle; third antennal joint a little longer than the fourth; propodeum with a median groove above distinct, on posterior slope moderately broad, widened at the turn and here striate. Pygidium moderately long, sides not concave, not as broad at base as *T. rufofasciatus*. Hind basitarsus with two spines on upper outer row before tip; front basitarsus with four before tip; the upper inner side of hind tibiae show five spines before tip, all short.

In fore wing the lower side of third submarginal cell is plainly longer than the outer lower side of the second cell; the long spur of hind tibia not longer than the basitarsus.

Length, ♀, 13 mm.

From Fedor, Lee County, Texas, 1 and 3 May (G. Birkmann), also Austin, Texas, 9 May (Brues). Type M. C. Z. no. 25631.

TACHYTES SPATULATUS Fox

This is known from the male only. Specimens before me are from places in Colorado, North Dakota, Utah, Wyoming, and several from

Oak Creek Canon, Arizona (Snow coll.). The eighth ventrite ends in two broad, rather rounded lobes. It is possible that this is the male of *T. fulviventris*, instead of *T. caelebs* Patton, so placed by Fox.

TACHYTES BASIRUFUS Rohwer

I have seen a type in Washington (U.S.N.M.). It has moderately long hair on propodeum; all basitarsi dark, with white spines; male only known. The eighth ventrite is rather slender, the apex with two broad, blunt teeth, not far apart. The hind femora have a few hairs on basal part below. It differs from other western males in shape of this ventrite. Specimens before me are from La Junta, Colorado, 12 August; Bluff, Utah, 7 July; and Mesilla Park, N. Mexico, 12 July. The female is unknown.

Subgenus TACHYNANA

TACHYTES ABDOMINALIS Say

Described from Arkansas. I apply this name to specimens like the two here labelled by Cresson from Dallas, Texas (Boll), and have marked as neotype one with the Cresson label, and the number "166", and that of Hagen's list "355". These are recorded in Cresson's Hymenoptera Texana. Others come from Fedor, Lee Co., Texas (Birkmann) and Ft. Stockton, Texas, 5 July (Bequaert). In American Museum are two, Grand Junction, Colo., 17 July, and La Junta, Colo., 12 August. The legs are wholly black and the spines above on hind tibiae are very short and stubby; the pygidium is golden to whitish near base; two spines above on hind basitarsus and four on front basitarsus. In all specimens seen the rufous occupies the whole of the first three segments of the abdomen. Say mentions the white lunule on each side of the fourth segment. No male is known that appears referable to this species.

TACHYTES OBSCURUS Cresson

A deep black species with little silvery except on face; bands on but three segments of abdomen; the femora are bare, hind basitarsus with two spines, front with five or six.

This is a very common species at Fedor, Texas, June to September. Also Valentine, 8 July, Waco and Alpine, 30 Sept., Texas. I have taken

it in Washington, D. C. and Falls Church, Virginia, 14 August and 7 September; also from Willets, 24 August, and Swannanoa, 12 September, both North Carolina; Brinson, Georgia; Long Key, Miami, 15 August, 4 September, both Florida; and Tucson, Arizona. Recorded from Nebraska and Kansas.

T. texanus Cress. is considered the male, and I believe, correctly. The eighth ventrite ends in a slender spine each side, rather far apart. The fifth and sixth ventral segments at sides toward tip have a brush of low but erect brown hair.

TACHYTES OBDUCTUS Fox

Type came from Tennessee. Both sexes are common at Fedor, Texas in June. The wings are darkened, particularly the marginal cell; the bands on abdomen usually a little yellowish. The hind femora bare, hind basitarsus with two spines, front with five.

The male (allotype) is more slender than female, the wings less darkened, face silvery, thorax and propodeum nearly covered with whitish hair; four segments silvery at tip; antennae short, fourth joint a little longer than third; the groove on posterior slope of propodeum very slender; tibiae with few short, white spines; pygidium rather slender; eighth ventrite ends in two sharp points.

Length 9 to 9.5 mm.

TACHYTES BIRKMANNI Rohwer

Known only from females which appear to be not uncommon near Fedor, Lee Co., Texas. A rather slender-bodied species, with hyaline wings, silvery bands on four segments, faint in middle, but on sides extending forward; the median groove is linear; four or five spines on front basitarsus before tip, hind basitarsus with one or two spines above, no spine near middle of anterior side; pygidium slender, golden; tibial spines not as stubby as in *T. abdominalis*; third antennal joint fully twice as long as the second.

TACHYTES MINOR Rohwer

Based on a male, much like *T. birkmanni* of which it may be the male. Third joint of antennae hardly twice as long as second, and not longer than fourth; vertex-width fully one half basal width of face; groove on posterior slope of propodeum linear; no spine on front

(outer) side of hind basitarsus; eighth ventrite with two short, rather well-separated points.

Besides the type, I have seen two specimens, also from Fedor, Texas, in the Birkmann collection.

TACHYTES PATTONI spec. nov.

This species is similar to both *T. rufofasciatus* and *T. birkmanni*. Like them, it is wholly black except the basal part of abdomen, which is rufous on three segments, in the other species often rufous on all segments. Like them, it has two spines above on hind basitarsus, four on front basitarsus, no hair under hind femora, no dorsal groove to propodeum, the pygidium is golden, and the spines on hind tibia are short and stout. It is smaller than most *rufofasciatus*, but is broader than most *birkmanni*; the pubescence on face and clypeus is dull golden like that on *birkmanni* (on *rufofasciatus* it is white). The bands on abdomen are not white as in *birkmanni*, but not as yellow as those of *rufofasciatus*, but it differs from both in having but three bands; the fourth and fifth segments in specimens seen (ten) are wholly dull black and no trace of a band on the fourth. The pygidium is less narrowed toward tip, and the sides slightly but plainly convex; the third joint of antennae is no longer than fourth; the wings are hyaline, venation yellowish; the pubescent patches on pleura and propodeum are hardly as prominent as in *rufofasciatus* and paler.

Length of body 8.5 to 9.5 mm.

Several specimens from Fedor, Lee Co., Texas (Birkmann), 17 and 21 June; one from Miami, Florida (A. E. Wight), taken in March, this last the holotype, M. C. Z. no. 25639.

A male from Raleigh, North Carolina, 16 June, might be the male of this species. The basal segment is partly reddish above, the tibiae and tarsi pale as in *T. minor*. It is not as slender as *minor* and there is no long erect hair on face, but only very short pile, which is certain. Views from above appears golden. The third joint of antennae only a little longer than the second, and shorter than the fourth; long spur of hind tibia about equal to hind basitarsus, latter without spines on the anterior side; eighth ventrite ends in two points rather far apart; the groove on posterior slope of propodeum is much widened above as in *parvus* and *minutus*. The hair on mesonotum is short and plainly yellowish, that on propodeum still shorter and white; the face does not show the two rounded elevations seen in *parvus*; in fore wings the top of the third submarginal cell is wider than the top of the second.

Length 7 mm.

TACHYTES ARIZONICUS spec. nov.

Black, but abdomen largely reddish, the last two or three segments black; legs black, tarsi more or less yellowish; face, back of head, borders of mesonotum, pleura, sternum, posterior sides of propodeum, and bands on three segments of abdomen silvery; mesonotum with dark, faintly yellowish pubescence in middle; pygidium golden; wings hyaline. Face with erect white hair, rather short; propodeum with moderately short gray hair; no hair beneath hind femora, others with white appressed pubescence. Clypeus below in a broad, evenly rounded lobe, projecting only a little; third joint of antennae hardly longer than fourth; propodeum without median groove above, that on posterior slope very narrow; spines above on hind tibiae very short and stout, rufous or brown; inner spur of hind tibiae about equal to basitarsus; two spines above on hind basitarsus, five above on front basitarsus; pygidium moderately broad, sides slightly convex; in fore wing the third submarginal cell reaches a little beyond the marginal cell.

Length ♀, 9.5 mm.

From Tempe, Arizona, 31 July and 2 August (Bequaert). Type M. C. Z. no. 25640.

TACHYTES MAESTUS Mickel

Black; tarsal joints more or less pale; pygidium golden; wings plainly a little yellowish; face, borders of mesonotum, pleura, sternum, posterior sides of propodeum, and four bands on abdomen silvery; some white also on last segment; the bands on second, third, and fourth segments are widened on sides; ventral segments also with some white pubescence, the abdomen generally shining. Hair on upper face rather short, long white hair on slope of propodeum and on base of abdomen.

Clypeal margin with a broad median lobe, with straight sides, and truncate across tip; third joint of antennae no longer than fourth; no distinct median line on propodeum above, behind the groove is narrow and short; pygidium rather broad, sides scarcely convex, except near tip; spines above on hind tibiae pale and sloping; inner spur of hind tibia about as long as basitarsus, hind basitarsus with two spines above before tip, front basitarsus with five spines above before tip.

In the male the colors are the same; the abdomen rather slender; the front coxae with a small apical tooth; hind tibiae with spines; the last ventral ends in two fine, widely separated spine-like points. The

abdomen is distinctly shining; the third antennal joint is as long as the fourth; the ventral plate ends in two widely separated slender points; the hair on pygidium is wholly depressed.

Length ♀ 9.5 mm., ♂ 8 mm.

From Tempe, Arizona, 30 July, 1 and 4 August (Bequaert); type was from Nebraska. *T. intermedius* is said to have suberect pile on the pygidium, pubescence sparser than in *obscurus* (here much more abundant); and pile on legs more or less golden (not in *maestus*).

I have examined a paratype of *maestus* in the National Museum.

TACHYTES INTERMEDIUS Viereck

I have identified as this species several males from Tempe, Arizona, taken by Bequaert in August. The hair on head and thorax is short; the clypeus and face below ocelli is bright silvery, the tarsi (except basitarsi) rufous; the pygidium is rather broad, the eighth ventrite ends in two widely separated sharp points, not unlike *obductus*, but more widely separated. The second and third abdominal segments are rather broadly margined with white, the first and fourth less broadly; there is no hair under hind femora, but white appressed hair on posterior sides of front and mid femora; the long spur of hind tibia is not nearly as long as basitarsus. I have not seen the type which was described from Douglas Co., Kansas.

TACHYTES AUSTERUS Mickel

Described from Nebraska; I have not seen it, so it is not in the tables; the abdomen is partly red above, and is said to be similar to *T. abdominalis*, but with the clypeal margin strongly emarginate, and the recurrent veins not so proximate above.

TACHYTES HIRSUTIFRONS spec. nov.

♂ Dull black, last tarsal joint scarcely paler, abdomen above somewhat shining; face and clypeus with silvery pubescence; vertex, thorax above, pleura, and base of abdomen densely clothed with very long grayish white hair, longer than in other species of the size, the hair on vertex equal to second plus third antennal joints; abdomen with four silvery bands and the pygidium silvery as usual; venter with a triangular silvery patch on each side of three segments. Front and mid femora very hairy below and behind, hind femora not; mid and hind tibiae silvery above.